AMENDMENTS TO THE SPECIFICATION:

In the substitute specification, please amend paragraph 4 as follows:

This means that in general, each measured value is checked separately for the ~~a.m.~~ violation. Usually, the upper and lower limits are set very close to a potential serious operating scenario so that a limit violation of one or more measured values often require an instant emergency handling, e.g. an emergency stop, to avoid human and/or machinery damage.

In the substitute specification, please amend paragraphs 12 and 13 as follows:

A solution according to aspects of the invention is provided as set forth in ~~claim 1 respectively 3~~ the detailed description and claims that follow.

Preferred embodiments are laid down in the ~~related dependent claims~~ detailed description of the invention.

In the substitute specification, please amend paragraph 20 as follows:

In a testing phase, ~~a.m.~~ temperature patterns of normal and various abnormal operating conditions may be acquired and stored for future reference and comparison with real operating conditions. Thus, a history of temperature patterns related to various operating conditions may help to judge a current operating mode. Even situation in between a normal and abnormal operating mode may be detected and identified well before actual problems and/or dangers arise.

In the substitute specification, please amend paragraph 26 as follows:

Another aspect of the ~~a.m.~~ achievable data reduction according to the invention is the fact that within a plant, many plant components interact and so a faulty first component showing an abnormal temperature pattern often causes the occurrence of a failure in a second plant component, which also shows an abnormal temperature pattern caused by said faulty first component. Such expert knowledge of interaction between plant components can be advantageously used for reducing the amount of data to be acquired in connection with the invention, e.g. by simply avoiding temperature data acquisition of a second component connected "downstream" to a first component as the failure of the second component depends on the occurrence of the first component's failure.

In the substitute specification, please amend paragraphs 32 and 33 as follows:

Current and/or historic failures (and/or other process disturbances, which are often pre-scenarios of future failures or which may just be temporal and tolerable deviations of a normal operating situation) are related to specific temperature patterns derived from ~~a.m.~~ acquired measured values of temperatures; said patterns are constantly being refined, manually and/or automatically e.g. by employing expert systems, in the course of time during operation of the plant to achieve adaptive monitoring including a learning process.

When a particular temperature pattern is detected again, failure prediction can be made, especially based on comparable historic situations stored in the ~~a.m.~~ database.

In the substitute specification, please amend paragraphs 46 and 47 as follows:

As shown in FIG 2, the ~~The~~ technical installation 24 comprises a number of systems 22 and sub-systems 204, which at least partly interact.

During operation, at least some of the ~~a.m.~~ components of the technical installation 24 produce heat at several locations.

In the substitute specification, please amend paragraphs 51 and 52 as follows:

The ~~a.m.~~ temperature data are inputted into a data acquisition module 5, which is connected to an analysis module 6.

The analysis module 6 includes a pattern recognition algorithm to derive a temperature pattern 7 of the technical installation 24 from the ~~a.m.~~ temperature data; the temperature pattern 7 corresponds to a current operating situation of the technical installation 24 and may include a graphical, preferably a two- and/or three-dimensional, representation and/or a textual representation and/or table-wise structured information etc. thereof.

In the substitute specification, please amend paragraph 54 as follows:

The result of the ~~a.m.~~ comparison helps classifying the current operating situation and outputting a corresponding classification message 9, e.g. on a computer screen of a plant operator.

In the substitute specification, please amend paragraph 56 as follows:

Even if the temperature pattern 7 corresponding to the current operating situation does not perfectly match any of the known temperature patterns 7 stored in the database 8, the analysis module 6 still can classify the current operating situation e.g. by determining the degree of similarity between the current temperature pattern 7 and the known ~~a.m.~~ temperature patterns. Such known temperature pattern(s), which comes closest to the current temperature pattern, can determine the classification of the current operating situation.

In the substitute specification, please amend paragraphs 73-75 as follows:

The ~~a.m.~~ list of temperature data can be ~~catagorized~~ categorized as follows:

The fluid inlet ~~32 respectively~~temperature 32 and fluid outlet temperature 34 are usually acquired and processed by a control system of the technical installation 24 and can therefore be directly obtained via a data connection between said control system and an apparatus 1 according to the invention; no additional measurements etc. are necessary.

The pump ~~36 respectively~~bearing temperature 36 and motor bearing temperature 38 can, but are usually not processed within the control system and therefore have to be acquired additionally, e.g. by means of temperature sensors and/or thermography equipment, e.g. an infrared camera focussed on said bearing(s); the method of choice depends on the necessary expenses and/or expected results. Those temperatures have been selected for monitoring of the pumping system according to the invention, because they are well suited indicators for the operating situation of the pumping system: a bearing going faulty changes its temperature profile while still keeping its function for a period of time. A failure of the pumping system can therefore be detected well before its actual breaking down.